

ROWING MACHINE

BACKGROUND AND SUMMARY OF THE INVENTION

5 The present invention relates to exercising machines and, more particularly, to a rowing machine, which is collapsible and, practical for exercising the muscles of different parts of the body.

10 Figure 1 shows a rowing machine according to the prior art. This rowing machine is practical for exercising rowing action. However, this design of rowing machine is not adjustable subject to the user's body size. Furthermore, this design of rowing machine requires much storage space because it is not collapsible when not in use.

15 The present invention has been accomplished under the circumstances in view. According to one aspect of the present invention, the user can apply force to the handlebar to turn the rocker arm back and forth and to further stretch the elastic cord members, and at the same time apply force the to seat with the legs and the hips to move the slide along the rails and to further stretch
20 the elastic cord members, i.e., simulate rowing action to exercise the muscles of the waist, abdomen, legs, and hands. The user can also selectively exercise the hands or the legs only, or connect the elastic pull cords to the eyes at the horizontal front foot bar or the eyes at the horizontal rear foot bar and then pull the handles when moving the slide along the rails.

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According to another aspect of the present invention, the rowing machine is collapsible. The foot rack can directly be turned inwards and closely attached to the rails of the base frame. Thereafter, the rocker arm and the seat can be received to the base frame, and then the rear support can be received to the bottom side of the rails of the base frame. The handlebar can further be detached from the rocker arm to reduce the packing size.

According to still another aspect of the present invention, the combined height of the vertical front bars and horizontal front foot bar of the base frame is lower than the combined height of horizontal rear foot bar and hollow upright sleeve of the rear support so that the rails are supported sloping forwardly downwards. Therefore, less resisting force is produced upon forward stroke of the slide, and much resisting force is produced upon back stroke of the slide.

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According to still another aspect of the present invention the spring pin of the upright sleeve can be shifted from one locating hole to another to lock the sliding bar to the upright sleeve in one of a series of elevational positions, adjusting the rails to the desired sloping angle.

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According to still another aspect of the present invention, the stop rod can selectively be fastened to the locating holes of the top lugs to limit the turning angle of the rocker arm subject to the user's body size (waistline).

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a side plain view of a rowing machine according to the prior art.

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Figure 2 is a perspective view of a rowing machine according to the present invention.

Figure 3 is an elevational view in an enlarged scale of a part of the rowing machine according to the present invention.

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Figure 4 is an elevational view in an enlarged scale of a part of the rowing machine showing the connection between the rocker arm and the handlebar. According to the present invention

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Figure 5 is an elevational view in an enlarged scale of a part of the rowing machine showing the connection between the foot rack and the rails according to the present invention.

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Figure 6 is an exploded view in an enlarged scale of a part of the rowing machine, showing the relationship between the foot rack and the rails according to the present invention.

Figure 7 is a sectional view in an enlarged scale of the rowing machine showing the connection between the rear part of the rails and the top part of the

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rear support according to the present invention.

Figure 8 is an oblique top view in an enlarged scale of the rear part of the rowing machine according to the present invention.

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Figure 9 is an oblique elevation of the rear part of the rowing machine according to the present invention.

Figure 10 is similar to Figure 2 but showing the position of the stop rod
10 adjusted.

Figure 11 shows the rowing machine received in a collapsed status according to the present invention.

15 **DETAILED DESCRIPTION OF THE INVENTION**

Referring to Figures 2~11, a rowing machine in accordance with the present invention is shown comprised of a base frame 1, a foot rack 2, a rear support 3, a rocker arm 4, a handlebar 5, a slide 6, a seat 71, and a back 72.

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The base frame 1 comprises two parallel rails 11 arranged in parallel, the rails 11 each having a plurality of locating grooves 1113 spaced near the front end for the positioning of the front foot rack 2 and a pin hole 1111 disposed near the rear end, each locating groove 1113 having a top entrance
25 1114 and an inner stop portion 1115, a horizontal front foot bar 112 transversely

disposed at the front side below the rails **11**, two vertical front bars **111** vertically connected between the front ends of the rails **11** and the horizontal front foot bar **112**, a stop bar **1110** transversely connected between the front legs **111** and spaced between the rails **11** and the horizontal front foot bar **112**, two
5 rollers **1122** fastened pivotally with the horizontal front foot bar **112** near the two ends, two eyes **1121** fixedly provided at the horizontal front foot bar **112** near the two ends, two elastic pull cords **81**, the elastic pull cords **81** each having a swivel hook **811** provided at one end and respectively coupled to the eyes **1121** and a handle **812** provided at the other end, two bottom lugs **15**
10 symmetrically provided at the bottom side of the rails **11** near the front legs **111**, two elastic cord members **16** each having a first end **161** respectively fastened to the lugs **15** and a second end **162** respectively connected to the slide **6**, two top lugs **119** respectively fixedly located on the rails **11** near the middle, the top lugs **119** each having a plurality of locating holes **1191** and **1192**, and a stop rod **17**
15 selectively fastened to the locating holes **1191** and **1192** of the top lugs **119** and adapted to limit the turning angle of the rocker arm **4**.

The foot rack **2** comprises a bottom block **21** inserted in between the rails **11**, two coupling rods **212** (see Figure 6) bilaterally extended from the
20 bottom block **21** and selectively pivotally coupled to the locating grooves **1113** of the rails **11**, a locating plate **22** provided at the top side of the bottom block **21** and supported on the rails **11**, a supporting bar **221** obliquely upwardly extended from the locating plate **22**, and a foot board **23** fixedly mounted on the supporting bar **221**.

The rear support **3** comprises a horizontal rear foot bar **38** transversely disposed at the bottom, two eyes **381** fixedly provided at the horizontal rear foot bar **112** near the two ends for the connection of the swivel hooks **811** of the elastic pull cords **81** after disconnection of the elastic pull cords **81** from the eyes **1121** at the horizontal front foot bar **112**, a hollow upright sleeve **31** vertically upwardly extended from the middle part of the horizontal rear foot bar **38**, two lugs **36** fixedly provided at two sides of the upright sleeve **31**, a sliding bar **32** slidably inserted into the upright sleeve **31**, the sliding bar **32** having a plurality of transversely extended locating holes **321** arranged at different elevations and a top end pivotally connected between the rear ends of the rails **11** by a pivot **12**, a grip **120** fixedly connected to one end of the pivot **12** for the holding of the user's hand when receiving the rowing machine, a lock pin **30** fastened to the pin holes **1111** of the rails **11** to lock the sliding bar **32** to the rails **11** (see Figure 7), a spring pin **311** provided at the upright sleeve **31** and selectively engaged into one locating hole **321** to lock the sliding bar **32** to the upright sleeve **31** at the desired elevation (see Figure 9), a locating plate **34** fixedly fastened to the rails **11** at the rear side by screws **113**, and an adjustment knob **35** mounted in the locating plate **34** and adapted to adjust the angular position of the rear support **3** relative to the rails **11**. The adjustment knob **35** has a threaded shank **351** threaded into the top side of the sliding bar **32** (see Figure 7). Further, the locating plate **34** has a spare screw hole **340** adapted to accommodate the adjustment knob **35** after disconnection of the adjustment knob **35** from the locating plate **34** and the sliding bar **32** when collapsing the rowing machine.

The rocker arm **4** is a tubular arm having a middle arm portion **41**, which has a front side **411** supported on the stop rod **17**, a front arm portion **42** obliquely forwardly extended from one end, namely, the top end of the middle arm portion **41**, and a rear arm portion **43** obliquely backwardly extended from the other end, namely, the bottom end of the middle portion **41**. Two connecting plates **44** are bilaterally pivotally fastened to the end of the rear arm portion **43** with a pivot **431**. Elastic cord members **45** are provided having the respective first ends **451** respectively connected to the connecting plates **44** and the respective second ends **452** respectively connected to the lugs **36** at the upright sleeve **31**.

The handlebar **5** comprises is a T-bar having a vertically extended bottom mounting portion **51** and two substantially transversely extended top hand grips **52**. The vertically extended bottom mounting portion **51** is inserted into the front arm portion **42** of the rocker arm **4**, having a plurality of locating holes **511** longitudinally arranged in a row. A spring pin **421** is provided at the front arm portion **42** and selectively engaged into one locating hole **511** to lock the handlebar **5** to the rocker arm **4** (see Figure 4). Further, a meter **50** is provided on the middle of the handlebar **5** at the top (see Figure 2).

The slide **6** comprises a substantially U-shaped base **61** inserted in between the rails **11**, top and bottom wheel axles **62** and **63** provided at two sides of the base **61**, top and bottom rollers **64** and **65** respectively mounted on the wheel axles **62** and **63** and peripherally disposed in contact with the rails **11** at top and bottom sides for enabling the base **61** to be moved along the rails **11**,

and two bottom lugs **66** bilaterally disposed at the bottom side of the base **61** for the connection of the second ends **162** of the elastic cord members **16** (see Figure 3).

- 5 The seat **71** comprises a seat frame **711** fixedly fastened to the top side of the base **61** of the slide **6** (see Figure 3).

 The back **72** comprises a mounting frame **720** pivotally connected to the seat frame **711** of the seat **71** with a pivot pin **73**. A lock pin **74** is detachably
10 fastened to the seat frame **711** and the mounting frame **720** to lock the back **72** to the seat **71**.

 When in use, the user can sit on the seat **71** and rest the back on the back **72** with the feet stepped on the upper part of the foot board **23** and the
15 hands holding the hand grips **52** of the handlebar **5**, and then alternatively push and pull the hands and the legs, causing the rocker arm **4** to be alternatively turned forwards and backwards to alternatively stretch and release the elastic cord members **45**. At the same time, the slide **6** is alternatively moved with the seat **71** and the user's hips back and forth along the rails **11** to alternatively
20 stretch and release the elastic cord members **16**. Therefore, the muscles of the user's abdomen, waist, legs, and hands are exercised. The user can also sit on the seat **71** and step the feet on the foot board **23** with the hands holding the seat **71**, and then alternatively extend and receive the legs to move the slide **6** back and forth along the rails **11**. The user can also sit on the seat **71** and step the feet
25 on the foot board **23**, and then alternatively stretch and release the elastic pull

cords **81**, which may be fastened to the eyes **1121** at the horizontal front foot bar **112** or the eyes **381** at the horizontal rear foot bar **38**.

When not in use, the user can lift the handlebar **5**, and then turn the
5 foot rack **2** downwardly inwards to be closely attached to the top side of the rails
11, and then remove the stop rod **17** from the top lugs **119** for enabling the
rocker arm **4** to be turned in one direction and closely attached to the collapsed
foot rack **2**, and then the lock pin **74** is removed from the seat frame **711** and the
mounting frame **720** to unlock the back **72**, for enabling the back **72** to be turned
10 in one directly and closely attached to the rails **11**, and then remove the lock pin
30 from the pin holes **1111** of the rails **11** and the sliding bar **32** and also remove
the adjustment knob **35** from the locating plate **34**, for enabling the rear support
3 to be turned in one direction relative to the base frame **1** and closely attached
to the rails **11** at the bottom side, and therefore the rowing machine is collapsed
15 (see Figure 11). If desired, the handlebar **5** can be detached from the rocker
arm **4** and then put in a transverse direction to minimize packing or delivery
space.

Further, the combined height of the vertical front bars **111** and
20 horizontal front foot bar **112** of the base frame **1** is lower than the combined
height of the horizontal rear foot bar **38** and hollow upright sleeve **31** of the rear
support **3** so that the rails **11** are supported sloping forwardly downwards. Thus,
the user can move the slide **6** forwards with less effort, and must employ much
effort when moving the slide **6** backwards.

Further, a buffer wheel **67** is pivotally mounted in the U-shaped base frame **61** of the slide **6** and peripherally disposed in contact with the back side of the middle arm portion **41** of the rocker arm **4** (see Figure 2).

5 As indicated above, the invention provides the following advantages and features:

1. The user can apply force to the handlebar **5** to turn the rocker arm **4** back and forth and to further stretch the elastic cord members **45**, and at the
10 same time apply force to the seat **71** with the legs and the hips to move the slide **6** along the rails **11** and to further stretch the elastic cord members **16**, i.e., simulate rowing action to exercise the muscles of the waist, abdomen, legs, and hands. The user can also selectively exercise the hands or the legs only, or connect the elastic pull cords **81** to the eyes **1121** at the horizontal front foot bar
15 **112** or the eyes **381** at the horizontal rear foot bar **38** and then pull the handles **812** when moving the slide **6** along the rails **11**.

2. The rowing machine is collapsible. The foot rack **2** can directly be turned inwards and closely attached to the rails of the base frame **1**. Thereafter,
20 the rocker arm **4** and the seat **71** can be received to the base frame **1**, and then the rear support **3** can be received to the bottom side of the rails of the base frame **1**. The handlebar **5** can further be detached from the rocker arm **4** to reduce the packing size.

25 3. The combined height of the vertical front bars **111** and horizontal

front foot bar **112** of the base frame **1** is lower than the combined height of horizontal rear foot bar **38** and hollow upright sleeve **31** of the rear support **3** so that the rails **11** are supported sloping forwardly downwards. Therefore, less resisting force is produced upon forward stroke of the slide **6**, and much
5 resisting force is produced upon back stroke of the slide **6**.

4. The spring pin **311** of the upright sleeve **31** can be shifted from one locating hole **321** to another to lock the sliding bar **32** to the upright sleeve **31** in one of a series of elevational positions, adjusting the rails **11** to the desired
10 sloping angle.

5. The stop rod **17** can selectively be fastened to the locating holes **1191** and **1192** of the top lugs **119** to limit the turning angle of the rocker arm **4** subject to the user's body size (waistline).

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